
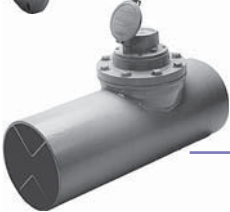






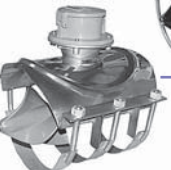






Water Meters – Type – Placement Energy Efficiency

Nevada Division of Water Resources



		Model no.	Pressure rating	Standard totalizer	Indicator/totalizer	Digital	Installation notes
	2" - 48"	Steel flanged-end tube meter	ML03	150 PSI	✓		
			ML04	150 PSI		✓	
			ML04D	150 PSI		✓	
			ML07	300 PSI	✓		
			ML08	300 PSI		✓	
			ML08D	300 PSI		✓	
	3" - 48"	Steel plain-end tube meter	ML11	150 PSI	✓		••
			ML12	150 PSI		✓	••
			ML12D	150 PSI		✓	••
			ML15	300 PSI	✓		••
			ML16	300 PSI		✓	••
			ML16D	300 PSI		✓	••
	4" - 72"	Steel welding saddle meter	ML19	150 PSI	✓		•••
			ML20	150 PSI		✓	•••
			ML20D	150 PSI		✓	•••
			ML21	300 PSI	✓		•••
			ML22	300 PSI		✓	•••
			ML22D	300 PSI		✓	•••
	3" - 72"	Meter head assembly	MLT1	150 PSI *	✓		•
			MLI1	150 PSI *		✓	•
			MLI1D	150 PSI *		✓	•
	16" - 120"	Manhole meter	ML23	150 PSI	✓		
			ML24	150 PSI		✓	
			ML24D	150 PSI		✓	
	4" - 16"	Steel flanged-end tube meter	LP03	150 PSI	✓		
			LP04	150 PSI		✓	
			LP04D	150 PSI		✓	
	4" - 12"	Steel plain-end tube meter	LP11	150 PSI	✓		••
			LP12	150 PSI		✓	••
			LP12D	150 PSI		✓	••
	4"	Strap-on saddle meter DUCTILE IRON SADDLE	LP21	150 PSI	✓		•••
			LP22	150 PSI		✓	•••
			LP22D	150 PSI		✓	•••
	6" - 20"	Strap-on saddle meter STAINLESS STEEL SADDLE	LP31	150 PSI	✓		•••
			LP32	150 PSI		✓	•••
			LP32D	150 PSI		✓	•••
	4" - 20"	Vertical upflow meter	VF27	150 PSI	✓		○
			VF28	150 PSI		✓	○
			VF28D	150 PSI		✓	○
	4" - 20"	Vertical downflow meter	VF31	150 PSI	✓		○
			VF32	150 PSI		✓	○
			VF32D	150 PSI		✓	○
	4" - 20"	Vertical upflow tee-tube meter	VF29	150 PSI	✓		○○
			VF30	150 PSI		✓	○○
			VF30D	150 PSI		✓	○○
	10" - 72"	Open flow meter	OF11	150 PSI	✓		○○○
			OF12	150 PSI		✓	○○○
			OF12D	150 PSI		✓	○○○

* Available for 300 PSI applications. Replacement meter heads available for other brands of meters.

NOTE Consult factory for special pressure ratings or materials of construction.

Water Meter Selection

Installation Type

OD Measurement

ID Measurement

Length Measurement

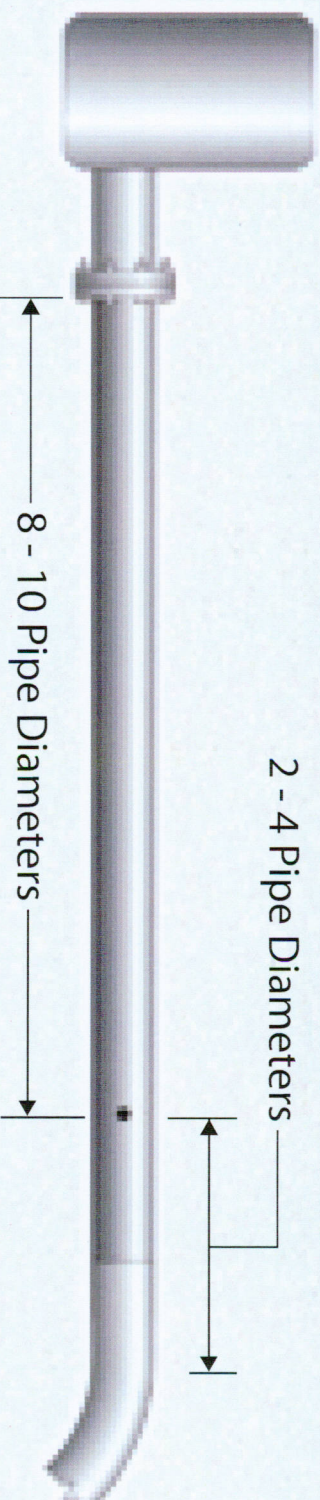
Flow Range (ex 0-2500 GPM)

Totalizer

(ex, CuFt, AcFt, Miner Inch – x1, x10, x100, etc.)

Outputs (4-20 ma, Pulse)

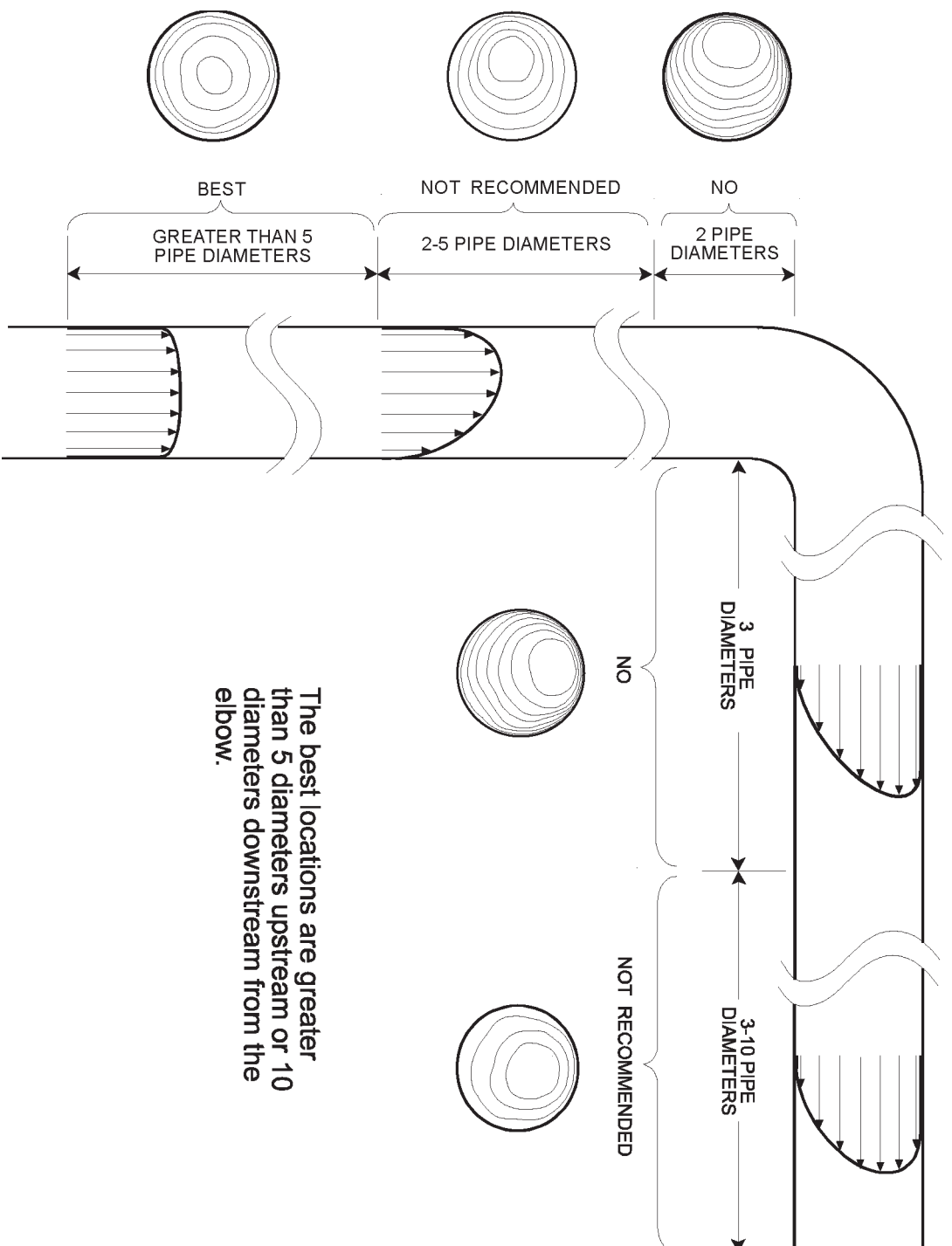
Meter or Remote Mount Head



This schematic shows an ideal test section:

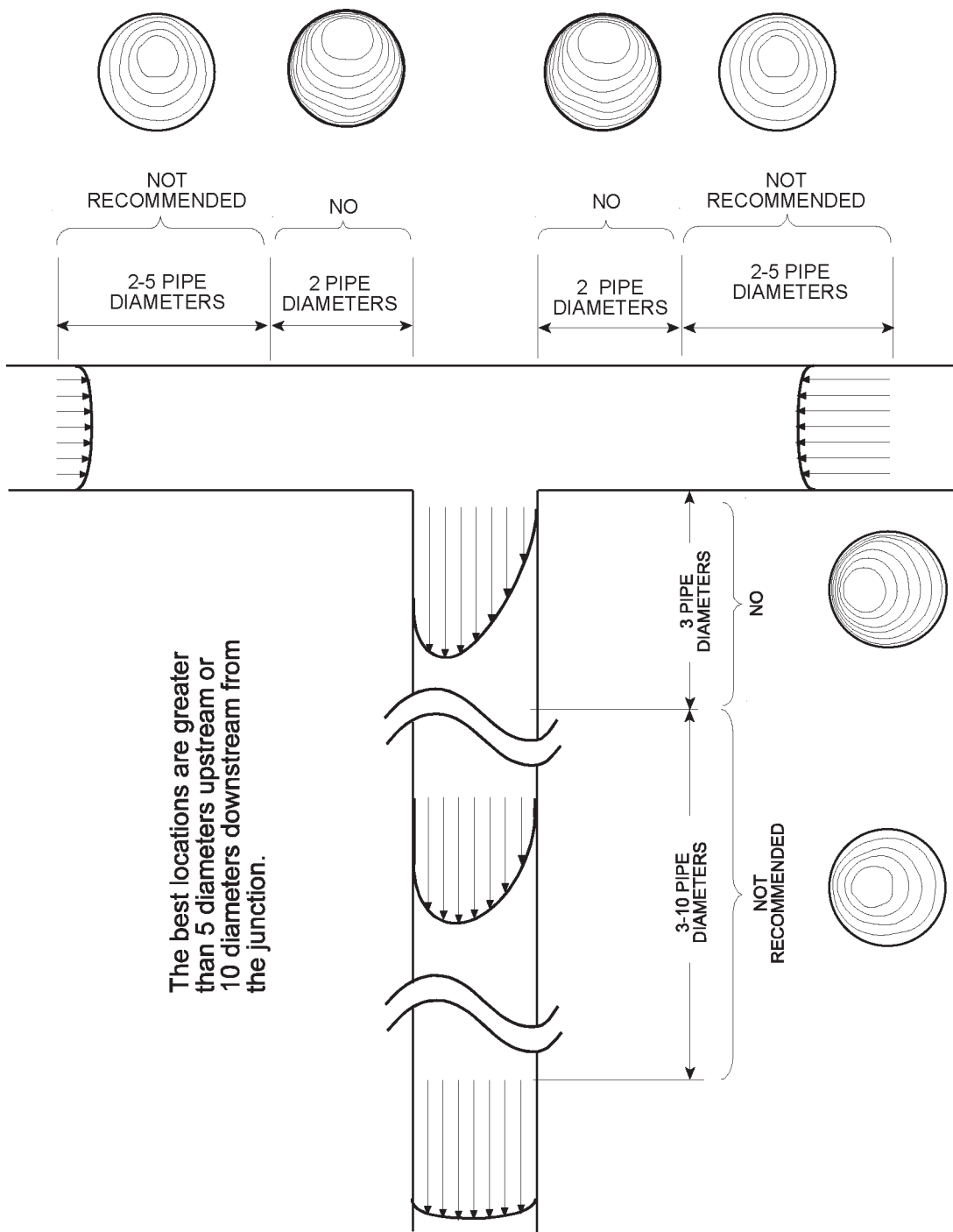
- 8 - 10 pipe diameters upstream
- 2 - 4 pipe diameters downstream, clear of obstructions or turns

(For a 6" diameter pipe this would mean 48" to 60" upstream and 12" to 24" downstream clear.)

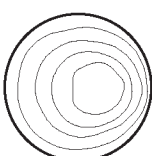
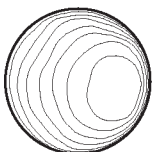
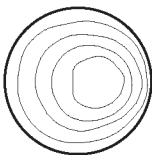


The best locations are greater than 5 diameters upstream or 10 diameters downstream from the elbow.

90° ELBOW



T - JUNCTION



NOT RECOMMENDED

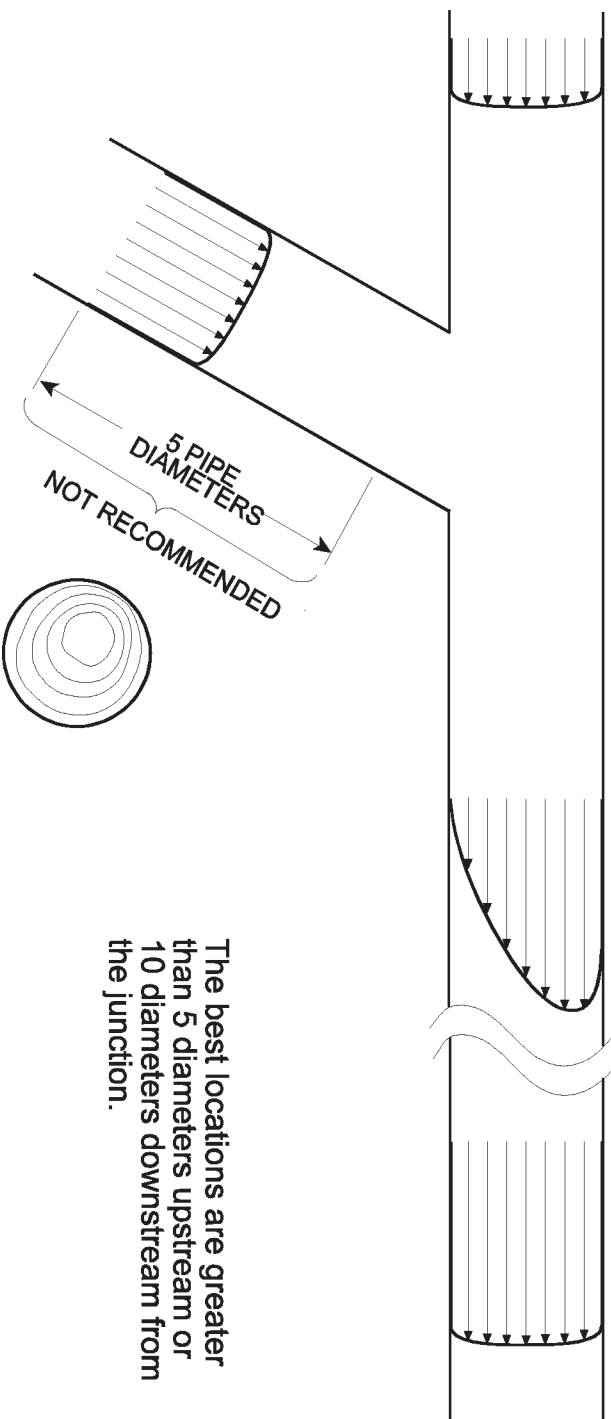
5 PIPE
DIAMETERS

NO

3 PIPE
DIAMETERS

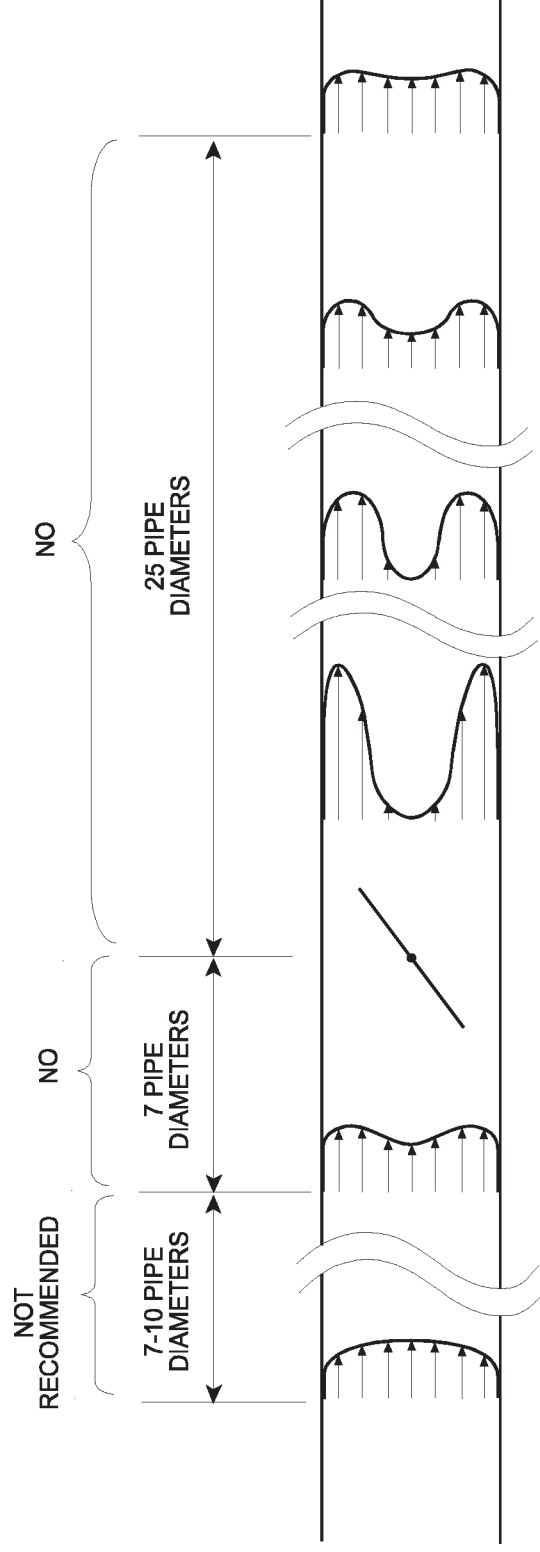
NOT RECOMMENDED

3-10 PIPE
DIAMETERS

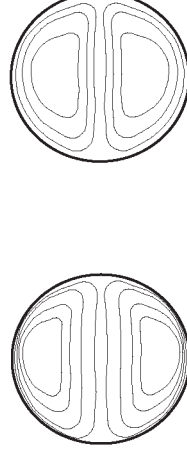


The best locations are greater than 5 diameters upstream or 10 diameters downstream from the junction.

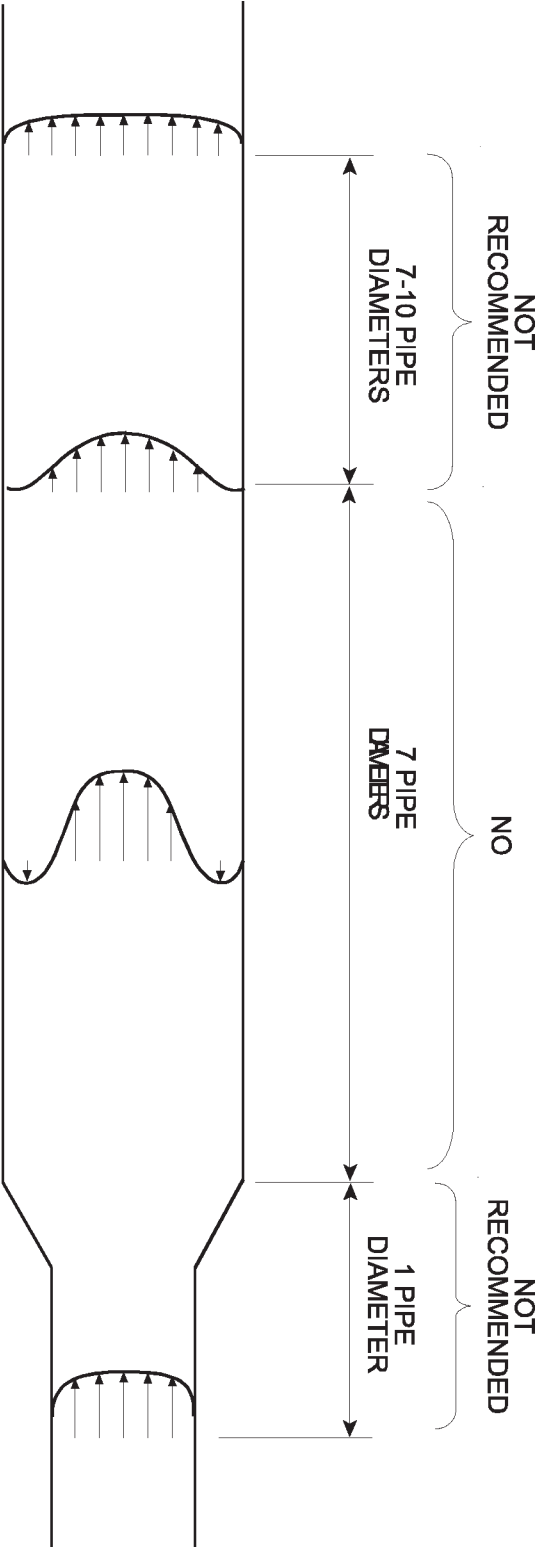
Y-JUNCTION



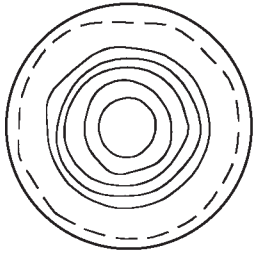
The purpose of an active valve is to vary the flow. An active valve will produce a distorted profile that changes as the flow changes. As a result, the sensor must be installed at least 10 diameters upstream or 25 diameters downstream from an active valve. The upstream side is the preferred location.



ACTIVE VALVES

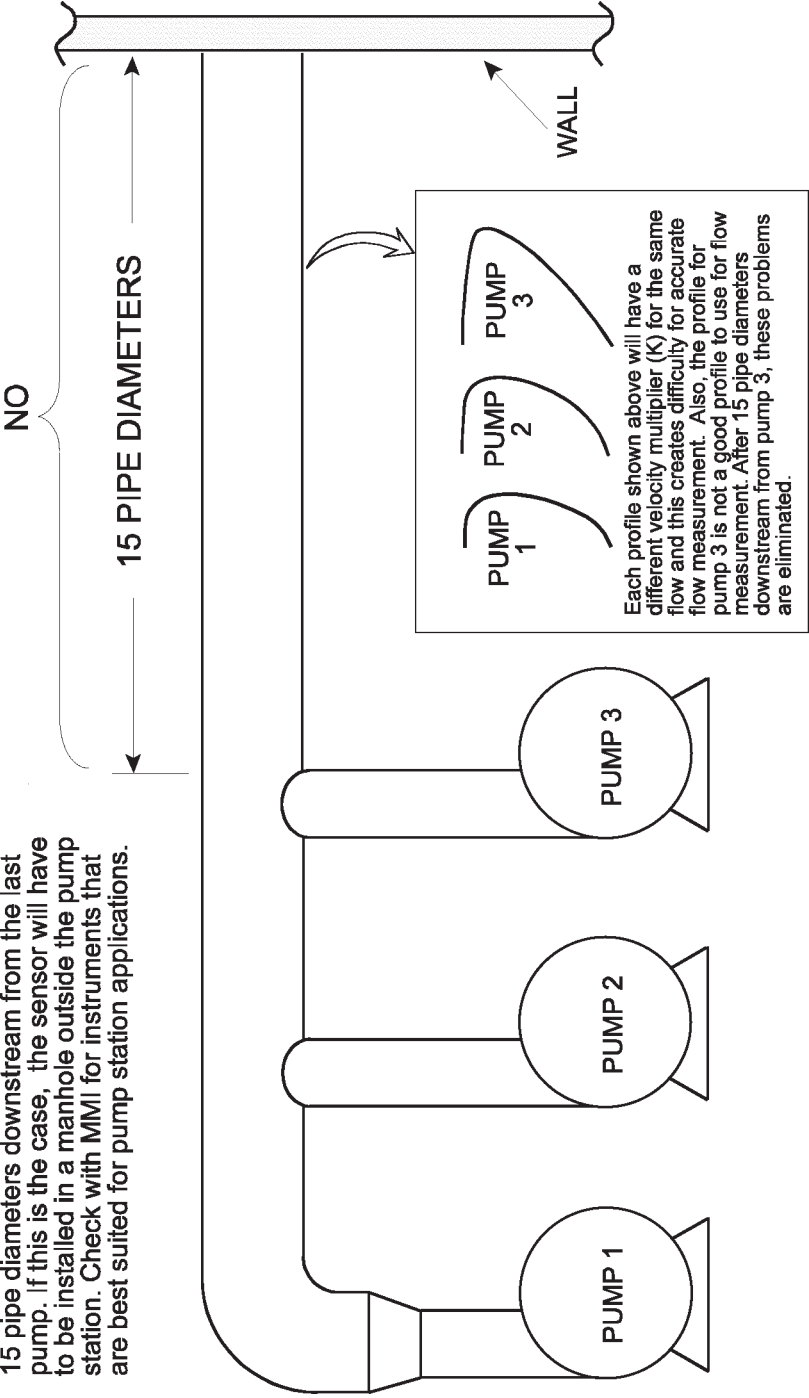


The best locations are greater than 10 diameters downstream or 1 diameter upstream from the junction.



SMALL LARGE PIPE JUNCTION

There may not be enough room in some pump stations to allow for the sensor to be installed 15 pipe diameters downstream from the last pump. If this is the case, the sensor will have to be installed in a manhole outside the pump station. Check with MMI for instruments that are best suited for pump station applications.



PUMP STATION



PUMP CHECK

Pumping Systems Analysts

Hydraulic Test Report

(951) 684-9801 • Lic. 799498 • Fax (951) 684-2988

CERTIFICATE OF ACCURACY

Customer: Valley Farms
Location: 2014 Hay Highway
Identification: **Well #4**

Test Date: 06/25/2014

Meter Size: 10" Make: Water Specialties
Meter No: 12-03701-10 Register: AcFt x .01

General Data

Meter read before test: 531.8 Meter read after test: 532.2
Calibration Factor found on meter: +00.0 Calibration Factor left on meter: - 08.4

Pipe ID: 10 (Inch) Pipe area: 78.54 (sq.in.) Pressure: 30.5 (Lbs/sq.in.)

Test Data

Test Before Inspection

Test Equipment			Totalizer		Volume			Metered GPM	Percent of Flow
Test No.	Mano Read	Actual GPM	Second Read	First Read	Diff.	Convert to Gallons	Time in Seconds		
1	25.00	1964	531.92	531.89	3	9,776	275.40	2130	108.5%
2	25.00	1964	531.95	531.92	3	9,776	276.00	2125	108.2%
3	25.00	1964	531.97	531.95	2	6,517	183.40	2132	108.6%
Avg.		1963.5					Avg.	2129.0	108.4%

Test After Calibration or Repair

1	25.00	1964	532.03	531.99	4	13,034	401.60	1947	99.2%
2	25.00	1964	532.07	532.03	4	13,034	402.13	1945	99.0%
3	25.00	1964	532.10	532.07	3	9,776	300.72	1950	99.3%
Avg.		1963.5					Avg.	1947.5	99.2%

Remarks

37.02.474n117.01.135w
PC 3704

Approved _____

P.O. Box 5646, Riverside, California 92517

"Pump Testing, The Service That Pays For Itself"

OVER REGISTERED

169 GPM

24 Hours = .747 Acre Feet

3500 Hours per Year

108.9 Acre Feet per Year

354,796,595 gallons

Air Lines

As you discussed with Jon, trending data for future design work, the varying water levels, cascading water and/or tight sounding space in a well, the installation of an air line will help ensure the ability to obtain water levels.

If you have any of your pumps serviced in the future, the installation of an air line would be a benefit to you.

The air line you were interested in was from:

Stainless Steel – Recommended, Very strong and is less prone to be damaged during installation.

Puffer Sweiven, LLP
6868 North Loop E # 304
Houston, Texas 77028

Don Spears
Office: (281) 240-2000
Cell: (281) 274-6196
don.speers@puffer.com

¼" .035 wall 304 stainless steel non jacketed, cut to order around \$1.00 foot plus freight

¼" .035 wall 304 stainless steel PVC jacketed, cut to order around \$1.30/foot plus freight

¼" high density black polyethylene \$0.12 foot in a 2000 foot roll. \$240.00 plus freight

They also sell SS bandit and buckles at a good price.

Harrington Industrial Plastics, Las Vegas Branch
5530 Arville Street
Las Vegas, NV 89118
Tel: (702) 566-5690 • Fax: (702) 566-1576

Email: LasVegas@hipco.com
www.harringtonplastics.com

Part # PPB-43-0500, ¼" high density black polyethylene x 500 foot roll black tubing.
\$0.20 foot 140.00 roll

Well Name: _____

Date: _____

Static Water Level: _____

Pumping Water Level: _____

Well Yield: _____

GPM: _____

Pump PSI: _____

Pivot PSI: _____

Date Installed: _____

Pump Manufacturer: _____

Size: _____

Type: _____

Model #: _____

Stages: _____

Pump Setting: _____

Pump Type: Deep Well Turbine, Turbine
Booster, Centrifugal Booster, Submersible

Design Head: _____

Design Flow: _____

Impeller Size: _____

Rated RPM: _____

Air Line Length: _____

Date Drilled: _____

Well Depth: _____

Casing Material: _____

Gravel Pack Type: _____

Gravel Pack Size: _____

Type Sanitary Seal: _____

Casing Size: _____

Perforation Type: _____

Type Perforations: _____

Perforations @ _____

Blank @ _____

Motor Manufacturer: _____

HP: _____

Volts: _____

Amps: _____

Speed: _____

Serial #: _____

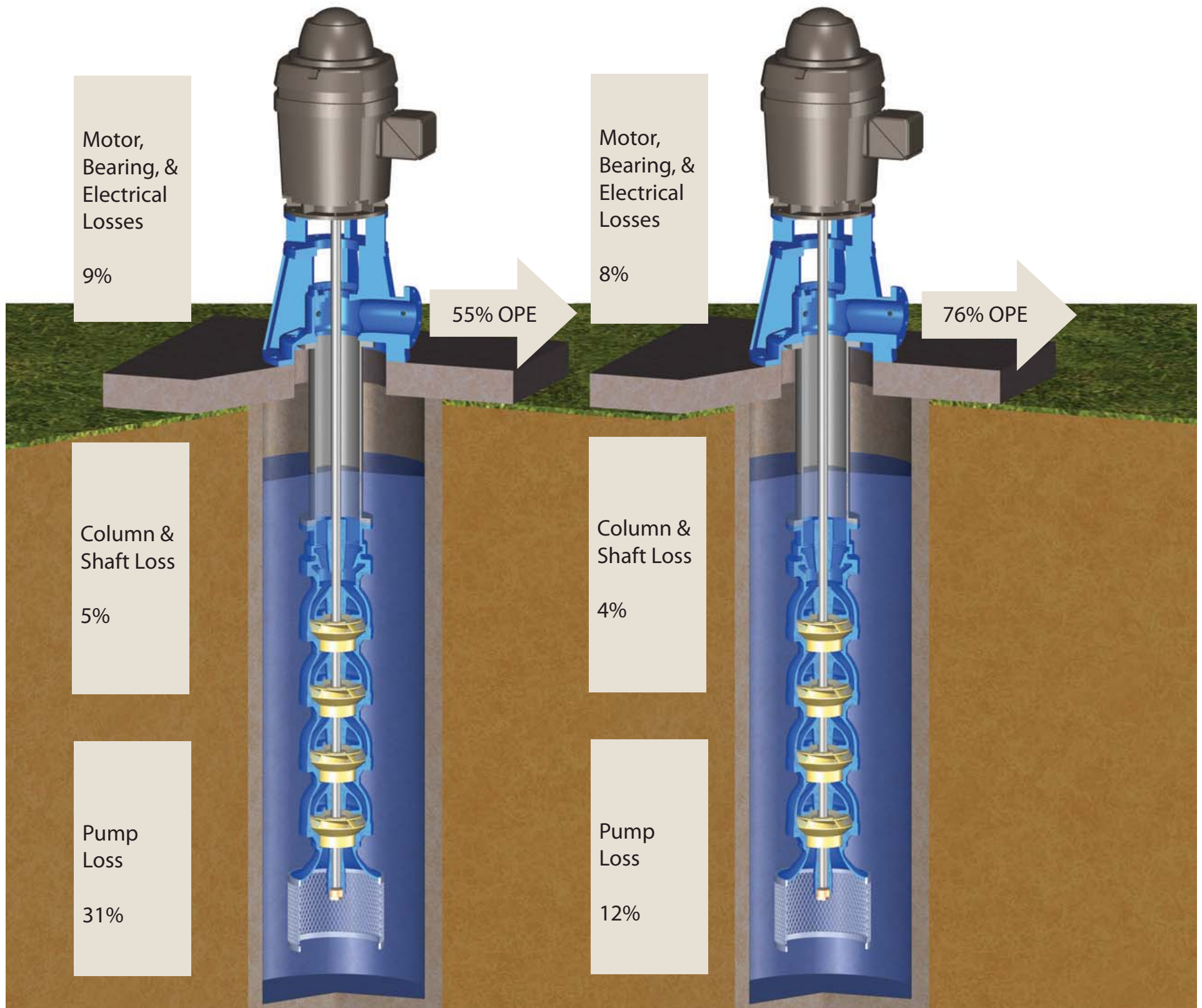
Type: _____

Frame: _____

Code: _____

KVA Code: _____

Notes: _____





PUMP CHECK

Pumping Systems Analysts

Hydraulic Test Report

(951) 684-9801 • Lic. 799498 • Fax (951) 684-2988

On Target Hay Farms
308 Long Range Road

Test Date: 11/14/2014
Pump type: DWT
Plant: Well 42

A test was made on this well pump and the following information was obtained.

EQUIPMENT

PUMP:	Aurora	SERIAL:	1581
MOTOR:	GE	SERIAL:	HVJ1201016
H.P.	350.0	State Well #:	01N11W30D04S
METER:	P2011S3S-5		

TEST RESULTS

	TEST 1	TEST 2	TEST 3
Discharge, PSI	135.0	139.0	148.0
Discharge head, feet	311.9	321.1	341.9
Standing water level, feet	280.5		
Drawdown, feet	141.0	137.6	128.3
Pumping water level, feet	421.5	418.1	408.8
Total pumping head, feet	733.4	739.2	750.7
Gallons per minute flow	1259	1224	1184
Gallons per foot of drawdown	8.9	8.9	9.2
Acre feet pumped per 24 hours	5.562	5.409	5.230
KW input to motor	284.8	283.9	282.0
HP input to motor	381.7	380.4	377.9
Motor load, % BHP	101.4	101.1	100.4
Measured speed of pump, RPM	1185		
KWH per acre foot	1229.1	1259.7	1294.0
Overall plant efficiency in %	61.1	60.1	59.4

Test 1 was the normal operation of the pump as found. The other test points are with throttling of the discharge valve.

The air line length was calibrated at 501.5 feet.

The air line direct read gauge was adjusted to read correct.

If you have any questions please contact Jon Lee at (951) 653-1910.



PUMP CHECK

Pumping Systems Analysts

Hydraulic Test Report

(951) 684-9801 • Lic. 799498 • Fax (951) 684-2988

ANNUAL PUMPING COST ANALYSIS

On Target Hay Farms

Test date: 11/14/2014

Plant: Well 42
Meter No.: P2011S3S-5
H.P. 350

The following cost analysis is presented as an aid to your cost accounting and planning. It is an **Estimate** based on the pump test data and your energy use or hours of operation during the previous 12-month period.

This pump was found to be operating inefficiently. A new pump, properly designed, should operate with an overall plant efficiency of about **75.0** percent.

A reduction in your energy usage and cost would occur, as shown below, if this pump was redesigned and/or rebuilt.

The following analysis and projection assumes that the water requirement, GPM, total pumping lift and hours of operation will remain as they were at the time of the pump test.

This cost analysis is based on the following electric rate schedule: C01

	EXISTING CONDITIONS	IMPROVED EFFICIENCY	SAVINGS
Total annual kWhrs	1,287,669	1,048,151	239,518
Total annual cost	\$144,347.70	\$117,497.73	\$26,849.97
kW input to motor	284.8	231.8	53.0
Hours of operation per year	4521	4521	
Equivalent 24 hour days	188.4	188.4	
Acre feet pumped per 24 hour day	5.562	5.562	
Average cost per kWhr	\$0.1121	\$0.1121	
Average cost per hour	\$31.93	\$25.99	
Average cost per acre foot	\$137.78	\$112.15	\$25.63
kWh per acre foot	1229.1	1000.4	228.6
Overall plant efficiency	% 61.1	% 75.0	



PUMP CHECK

Pumping Systems Analysts

Hydraulic Test Report

(951) 684-9801 • Lic. 799498 • Fax (951) 684-2988

ANNUAL PUMPING COST ANALYSIS

On Target Hay Farms

Test date: 11/14/2014

Plant: Well 42
H.P. 350

The following cost analysis is presented as an aid to your cost accounting and planning. It is an ESTIMATE based on the pump test data and your energy use during the previous 12-month period.

This analysis is based on the following electric rate: C01

EXISTING CONDITIONS

Total annual hours of operation	4521
Total annual kWhrs	1,287,669
Total annual cost	\$144,347.70
Average Cost per kWh	\$0.1121

	Test 1	Test 2	Test 3
KW input to motor	284.8	283.9	282.0
Acre feet pumped per 24 hour day	5.562	5.409	5.230
KWh per acre foot	1229.1	1259.7	1294.0
Pumping cost per hour	\$31.93	\$31.82	\$31.61
Pumping cost per acre foot	\$137.78	\$141.21	\$145.06
Overall plant efficiency	61.1	60.1	59.4
Expected efficiency, new pump, in %	75.0	75.0	75.0
Cost savings in %	18.6	19.9	20.8

* The above analysis and projection assumes that the water requirement, GPM, total pumping lift and hours of operation will remain as they were at the time of the pump test.